

REMARKS

Objection to the Title

The examiner objected to the title of the invention. The title has been amended herein to reflect swapping instructions, which is clearly indicative of the invention to which the claims are directed.

Rejection of claims 1-2 and 9-13 under 35 U.S.C. §102(b)

The Examiner rejected claims 1-2 and 9-13 under 35 U.S.C. §102(b) as being anticipated by Doing. Applicant asserts the cited art does not teach or suggest the claimed invention as amended herein.

In the response to arguments section of the second office action, the Examiner states that Doing discloses the thread switching mechanism as recited in claim 1, where the contents of the state registers are swapped. While it is evident that Doing does swap the contents of some registers that are associated with the thread buffer, the contents of the thread buffer are not swapped. The express teachings of Doing indicate the contents of the sequential hold buffer and the thread switch buffer are not swapped. In Doing, when there is a thread switch, the inactive thread becomes the active thread, and the active thread becomes the inactive thread as taught on column 14, lines 22 through 24. When a thread is switched from inactive to active, there is no swapping or moving of instructions between the sequential hold buffer and the thread switch buffer. To the contrary, the decode/dispatch logic 206 simply chooses a different buffer as the source of the next instruction

In contrast to Doing, the claims have been amended to clearly distinguish that the information that is swapped in the instruction buffers is instructions. Basis for the

amendment can be found in Figure 2 and page 6, lines 14-16 of the specification. Doing and the cited art does not teach or suggest to swap the instructions in the instruction buffers as claimed herein. Reconsideration is respectfully requested.

Claim 2

Claim 2 depends on claim 1, which is allowable for the reasons given above. Claim 2 is therefore allowable as depending on an allowable independent claim.

Claim 9

In the rejection of claim 9, the Examiner cites column 7, line 52 to column 8 line 3. This section of Doing describes changing the active thread as described above with reference to claim 1. The arguments with respect to claim 1 are included here by reference. Claim 9 is allowable for the same reasons given for claim 1 above. Doing does not teach or suggest the invention as claimed and the Examiner is respectfully requested to withdraw the rejection of claim 9.

Claims 10-13

Claims 10-13 depend on claim 9, which is allowable for the reasons given above. Claims 10-13 are therefore allowable as depending on an allowable independent claim.

Rejection of claims 3-6, 8 and 14-19 under 35 U.S.C. §103(a)

The Examiner rejected claims 3-6, 8 and 14-19 under 35 U.S.C. §103 as being unpatentable over Doing in view of Shoemaker. Applicants assert the cited art does not teach or suggest the invention as claimed.

Claims 3-6

Claims 3-6 depend on claim 1, which is allowable for the reasons given above. Claim 3-6 are therefore allowable as depending on an allowable independent claim. The Examiner adds the Shoemaker reference for the concept of multiple threads (more than 2). The arguments for claim 1 are included here by reference. In Shoemaker, the multiple threads are threads that are all available to be selected (paragraph 6). These multiple thread could be considered as stated by the Examiner, simply replicated portions of Doing. However, the claimed invention is not simply replicated portions of Doing. In the invention of claim 3, the primary threads swap instructions with secondary threads when there is a stall. The cited art does not teach or suggest swapping instructions for threads from a secondary thread to a primary thread. Reconsideration is respectfully requested.

Claim 8

Claim 8 was amended to add the limitation that the instructions from the backup instruction buffer are swapped with instructions in the primary register. This limitation is similar to the limitations discussed above for claim 1 and those arguments are incorporated here. Basis for this amendment can be found in previous claim 1 and throughout the specification. Reconsideration is respectfully requested.

Claims 14-17

Claims 14-17 depend on claim 9, which is allowable for the reasons given above. Further, claims 14-17 include the limitations discussed with reference to claims 3-6 discussed above and those arguments are included here. Claims 14-17 are therefore allowable as depending on an allowable independent claim and for the reasons stated above. Reconsideration is respectfully requested.

Claim 18

Claim 18 includes the limitations discussed with reference to claims 3-6 and those arguments are included here. Claim 18 is therefore allowable for the reasons stated above. Reconsideration is respectfully requested.

Claim 19

Claim 19 depends on claim 18, which is allowable for the reasons given above. Claim 19 is therefore allowable as depending on an allowable independent claim.

Rejection of claims 7 and 20 under 35 U.S.C. §103(a)

The Examiner rejected claims 7 and 20 under 35 U.S.C. §103 as being unpatentable over Doing in view of Shoemaker and in view of Levy. Applicants assert the cited art does not teach or suggest the claimed invention as amended herein. The Examiner has included the Levy reference for the concept of a pool of registers to backup the primary threads rather than just a single backup. However, these claims are allowable as discussed above with reference to claim 1 and claims 3-6; and the arguments above for these claims are included here by reference. Reconsideration is respectfully requested.

Rejection of claims 21 and 22 under 35 U.S.C. §103(a)

The examiner rejected claims 21 and 22 under 35 U.S.C. §103(a) as being unpatentable over the combination of Doing, Shoemaker and Redington. Claim 21 includes the newly added limitations that were addressed above with respect to claim 8 and is therefore allowable for the reasons given above. Claim 22 depends on claim 21, which is allowable, and is therefore allowable as depending on an allowable independent claim. Applicant respectfully requests reconsideration of the examiner's rejection of claims 21 and 22 under 35 U.S.C. §103(a).

Conclusion

In summary, none of the cited prior art, either alone or in combination, teach, support, or suggest the unique combination of features in applicants' claims presently on file. Therefore, applicants respectfully assert that all of applicants' claims are allowable. Such allowance at an early date is respectfully requested. The Examiner is invited to telephone the undersigned if this would in any way advance the prosecution of this case.

Respectfully submitted,

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